

Sl. No. :

DCE/19

Register
Number

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2019

**CIVIL ENGINEERING
(Diploma Std.)**

Time Allowed : 3 Hours]

[Maximum Marks : 300

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. The applicant will be supplied with Question Booklet 15 minutes before commencement of the examination.
2. This Question Booklet contains 200 questions. Prior to attempting to answer, the candidates are requested to check whether all the questions are there in series and ensure there are no blank pages in the question booklet. **In case any defect in the Question Paper is noticed, it shall be reported to the Invigilator within first 10 minutes and get it replaced with a complete Question Booklet. If any defect is noticed in the Question Booklet after the commencement of examination, it will not be replaced.**
3. Answer all questions. All questions carry equal marks.
4. You must write your Register Number in the space provided on the top right side of this page. Do not write anything else on the Question Booklet.
5. An answer sheet will be supplied to you, separately by the Room Invigilator to mark the answers.
6. You will also encode your Question Booklet Number with Blue or Black ink Ball point pen in the space provided on the side 2 of the Answer Sheet. If you do not encode properly or fail to encode the above information, action will be taken as per Commission's notification.
7. Each question comprises *four* responses (A), (B), (C) and (D). You are to select **ONLY ONE** correct response and mark in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
8. In the Answer Sheet there are **four** circles (A), (B), (C) and (D) against each question. To answer the questions you are to mark with Blue or Black ink Ball point pen **ONLY ONE** circle of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. e.g. If for any item, (B) is the correct answer, you have to mark as follows :

(A) ● (C) (D)
9. You should not remove or tear off any sheet from this Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the time of examination. After the examination is concluded, you must hand over your Answer Sheet to the Invigilator. You are allowed to take the Question Booklet with you only after the Examination is over.
10. **Do not make any marking in the question booklet except in the sheet before the last page of the question booklet, which can be used for rough work. This should be strictly adhered.**
11. Applicants have to write and shade the total number of answer fields left blank on the boxes provided at side 2 of OMR Answer Sheet. An extra time of 5 minutes will be given to specify the number of answer fields left blank.
12. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.

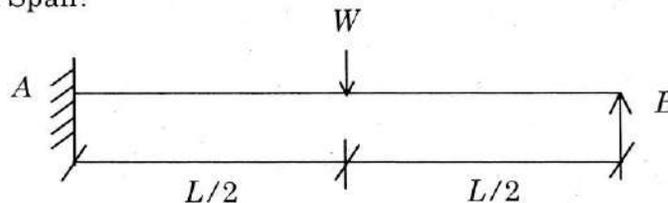
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SPACE FOR ROUGH WORK

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1. In a cantilever with uniformly distributed load, the variation of a bending moment is according to
- (A) Linear Law (B) Parabolic Law
 (C) Cubic Law (D) Horizontal Law
2. In which of the following beams, the supports are not situated at the ends
- (A) Cantilever beam (B) Simply supported beam
 (C) Overhanging beam (D) Fixed beam
3. The Modulus of rigidity is given by the relation
- (A) $C = \frac{\tau}{e_s}$ (B) $C = \frac{\sigma_n}{e_v}$
 (C) $C = \frac{\sigma}{e}$ (D) $C = \frac{\tau}{e_v}$
4. The value of shear force at A for a simply supported beam AB of span 10 m with point load 25 kN at centre of span is
- (A) 25 kN (B) 50 kN
 (C) 12.5 kN (D) 2.5 kN
5. If l and δl are the length and change in length respectively, the strain is equal to
- (A) $\frac{\delta l}{l}$ (B) $\frac{l}{\delta l}$
 (C) $l \times \delta l$ (D) $l^2 \times \delta l$
6. A perfect frame should satisfy the relation
- (A) $m = 2j - 3$ (B) $m = 2j - 4$
 (C) $m = 3j - 2$ (D) $m = 3j - 3$

7. The property of certain materials of returning back completely to its original shape and size, after the removal of external forces, then it is said to be
- (A) Perfectly Plastic (B) Perfectly Elastic
 (C) Partially Plastic (D) Partially Elastic
8. The deflection at the free end of a cantilever of length (l) carrying a point load (W) at its free end is given as
- (A) $\frac{Wl^3}{3EI}$ (B) $\frac{Wl}{2EI}$
 (C) $\frac{Wl^2}{2EI}$ (D) $\frac{Wl^3}{2EI}$
9. Algebraic sum of the moments of the forces, to the right (or) left of the beam section is known as
- (A) Bending moment (B) Shear force
 (C) Uniformly distributed load (D) Point load
10. The difference between number of unknown reaction components and the number of available equilibrium equations is
- (A) degree of freedom (B) degree of determinacy
 (C) degree of indeterminacy (D) degree of displacement
11. What is the prop reaction value at 'B' of the following cantilever beam subjected to a point load 'W' at Mid Span?



- (A) $\frac{5}{16}W$ (B) $\frac{11}{16}W$
 (C) $\frac{5}{8}W$ (D) $\frac{3}{8}W$

12. A column of length l is one end fixed and other pin jointed. Its equivalent length will be equal to
- (A) $2l$ (B) l
 (C) $0.5l$ (D) $0.707l$
13. The surveys are to fix the boundaries of municipalities are
- (A) Cadastral surveys (B) City surveying
 (C) Engineering surveys (D) Military surveys
14. What is the critical load (P) value of a column with one end fixed and other end hinged?
- (A) $P = \frac{\pi^2 EI}{L^2}$ (B) $P = \frac{4\pi^2 EI}{L^2}$
 (C) $P = \frac{2\pi^2 EI}{L^2}$ (D) $P = \frac{\pi^2 EI}{4L^2}$
15. A propped cantilever beam of span ' l ' propped at free end is subjected to UDL of w/m run over its entire length then in bending moment diagram, the point of contra flexure occur at a distance of
- (A) $\frac{2l}{4}$ from propped end (B) $\frac{3l}{4}$ from propped end
 (C) $\frac{l}{4}$ from propped end (D) $\frac{l}{2}$ from propped end
16. A cantilever beam subjected to uniformly distributed load over its entire span then the maximum deflection occurs at
- (A) fixed end (B) free end
 (C) middle of span (D) at $\frac{1}{3}$ from free end

17. Seasoning of timber is required to
- (A) soften the timber (B) harden the timber
(C) straighten the timber (D) remove sap from the timber
18. The formation of dull patches occurs on the finished polished surface. It is called
- (A) Bloom (B) Blistring
(C) Flashing (D) Wrinkling
19. Due to uneven shrinkage, wood sometimes flattens during drying this is known as
- (A) Check (B) Cup
(C) Collapse (D) Split
20. The thin radial fibres extending from pith to cambium layer are known as
- (A) Medullary rays (B) Medulla
(C) Alburnum (D) Heart wood
21. For marine work, the best suited cement is
- (A) Low heat portland cement (B) Rapid hardening cement
(C) Ordinary portland cement (D) Blast furnace slag cement
22. The proper size of mould for testing compressive strength of cement is
- (A) 7.06 cm (B) 10.05 cm
(C) 15 cm (D) 12.05 cm
23. In paint linseed oil is used as
- (A) A thinner (B) A drier
(C) A vehicle (D) A water – proofing base

24. Fire resistant mortar is used for
- (A) Insulating and acoustic properties
 - (B) Protection against hazardous emission
 - (C) For laying refractory brick in furnace, chimney
 - (D) Packing the oil wells
25. High alumina cement is produced by fusing together of mixture of
- (A) Limestone and bauxite
 - (B) Limestone and gypsum
 - (C) Limestone and clay
 - (D) Limestone and chalk
26. The consistency of concrete can be measured in terms of
- (A) Hardness
 - (B) Impact
 - (C) Slump
 - (D) Crushing
27. The horizontal distance between the vertical joints in successive courses is termed as
- (A) Lap
 - (B) Bond
 - (C) Perpend
 - (D) Bed
28. The vertical distance between the wall plate and top of the ridge is called _____ of roof.
- (A) rise
 - (B) hip
 - (C) wall plate
 - (D) template
29. The degree of workability of concrete can be found in terms of
- (A) Compacting factor
 - (B) Hardness
 - (C) Impact value
 - (D) Fineness of coarse aggregate
30. The concrete with characteristic (28 day) compressive strength in the range 50 to 60 MPa is termed as
- (A) standard concrete
 - (B) normal concrete
 - (C) high strength concrete
 - (D) low strength concrete

31. The construction of cement concrete road is done by _____ methods.
- (A) one (B) two
 (C) three (D) four
32. Extreme end supports of a bridge superstructure
- (A) Apron (B) Revetment
 (C) Pier (D) Abutment
33. Pedestrian loading Islands are provided at
- (A) useful for to change the traffic direction
 (B) to separate opposing flow of traffic
 (C) to guide the traffic
 (D) regular bus stop for protection of passengers
34. A layer of concrete, masonry stones etc. laid like flooring at the entrance or outlet of a culvert or a bridge to prevent scouring
- (A) Revetment (B) Apron
 (C) Wing walls (D) Foundation
35. The centre to centre distance between any two adjacent support is called
- (A) Total span (B) Clear total span
 (C) Clear span (D) The span
36. Triaxial Compression test is used to determine
- (A) Tensile strength of soil (B) Shear strength of soil
 (C) Water absorption value (D) Bearing strength of soil
37. A road or a railway over a valley is called
- (A) an aqueduct (B) viaduct
 (C) causeway (D) road bridge

38. PCU refers to
- (A) Passenger Carriage Units (B) Passenger Count Units
 (C) Passenger Cart Units (D) Passenger Car Units
39. Minimum super elevation provided is
- (A) 7%
 (B) 10%
 (C) not less than the grade of the road
 (D) not less than camber at the section
40. Super elevation $(e) = \frac{V^2}{127R}$ where, V is the
- (A) Centrifugal force (B) Weight of the vehicle
 (C) Speed of vehicle in kmph (D) Frictional force
41. The area of the trapezoidal channel having the bottom width 'b', depth 'd' and side slopes 1:1 is given by
- (A) $A = (b + 2d)d$ (B) $A = (b + d)d$
 (C) $A = (b + 0.5d)d$ (D) $A = (2b + d)d$
42. Conditions for most economical channel of trapezoidal section having bottom width 'b' and depth 'd' is given by
- (A) $\frac{b + 2nd}{2} = d^2\sqrt{n+1}$ and $m = \frac{d}{2}$
 (B) $\frac{b + 2nd}{2} = d\sqrt{n^3 + 1}$ and $m = \frac{d}{3}$
 (C) $b + nd = d\sqrt{n+1}$ and $m = \frac{d}{3}$
 (D) $\frac{b + 2nd}{2} = d\sqrt{n^2 + 1}$ and $m = \frac{d}{2}$

43. Ground water mainly depends upon the two properties of the underground soil
- (A) porosity and permeability
 - (B) voids and pores
 - (C) degree of saturation and water content
 - (D) void ratio and moisture content
44. Recuperation test is used to determine the
- (A) Yield of well
 - (B) Permeability
 - (C) Porosity
 - (D) Storage capacity
45. The maximum contraction takes place at a section slightly on the downstream side of the orifice, where the jet of water is more or less horizontal. Such a section is known as
- (A) Vena contracta
 - (B) Cross section
 - (C) Orifice
 - (D) Mouth piece
46. The pump which raises the water or liquid from a lower level to a higher level by the action of centrifugal force is known as
- (A) Centrifugal pump
 - (B) Reciprocating pump
 - (C) Vane pump
 - (D) Jet pump
47. Pump is a machine which converts
- (A) Pressure energy into Mechanical energy
 - (B) Mechanical energy into Pressure energy
 - (C) Mechanical energy into Electrical energy
 - (D) Electrical energy into Pressure energy
48. The trapezoidal section of a channel will be most economical, when its
- (A) wetted perimeter is minimum
 - (B) wetted perimeter is maximum
 - (C) side slope is minimum
 - (D) side slope is maximum

49. If 'A' is the area of the immersed surface, w is the specific weight of liquid and \bar{x} is the depth of horizontal surface from the liquid surface, then the total pressure P on the surface is given by

(A) $P = wA^2\bar{x}$

(B) $P = w^2A\bar{x}$

(C) $P = wA\bar{x}$

(D) $P = wA\bar{x}^2$

50. The intensity of pressure 'p' is related to specific weight 'W' of the liquid and vertical depth 'h' of the point by the equation

(A) $p = Wh$

(B) $h = pW$

(C) $p = Wh^2$

(D) $p = Wh^3$

51. The shape of vertical curves usually are

(A) Circular

(B) Parabolic

(C) Spiral

(D) Elliptical

52. In a transit theodolite, the vernier in vertical circle is

(A) Fixed

(B) Movable

(C) Either fixed or movable

(D) Always movable

53. In Surveyor's Compass, the Graduations are lies in

(A) R.B. System

(B) W.C.B. System

(C) Both W.C.B. And R.B. System

(D) Azimuthal System

54. If the bearing of $AB = N 40^\circ E$, and bearing of $BC = S 70^\circ E$, then $\angle ABC =$
- (A) 30° (B) 70°
~~(C) 110°~~ (D) 40°
55. The horizontal distance between point of curve to point of tangent is called
- (A) Length of long chord
 (B) Length of curve
 (C) Apex distance
 (D) Mid ordinate
56. In offset from long chord method, the ordinate at a distance x from mid point of long chord is expressed by the relation
- (A) $O_x = \sqrt{R^2 - X^2} - (R - O_0)$ (B) $O_x = \sqrt{R^2 + X^2} - [R - O_0]$
 (C) $O_x = \sqrt{R^2 - X^2} + [R - O_0]$ (D) $O_x = \sqrt{R^2 - X^2} - (R + O_0)$
57. The following sights are taken on a turning point
- (A) Back sight only
 (B) Fore sight only
 (C) Fore sight and back sight
 (D) Intermediate sight and fore sight
58. Photogrammetric imaging is a method of recording a
- (A) One dimensional view of three dimensional object
 (B) Two dimensional view of three dimensional object
 (C) Three dimensional view of three dimensional object
 (D) Two dimensional view of two dimensional object

59. The process of turning the telescope in vertical plane through 180° about the trunnion axis is known as
- (A) Centring (B) Transiting
(C) Swinging (D) Changing
60. A Tacheometer fitted with an anallactic lens, then the value of additive constant is
- (A) 0 (Zero) (B) 100
(C) 0.3 (D) 0.15
61. As per IS Recommendations, the length of each link in 30 m chain must be
- (A) 10 cm (B) 20 cm
(C) 30 cm (D) 15 cm
62. A Sewer which receives storm water, surface run-off and sewage is called a
- (A) Common Sewer (B) Combined Sewer
(C) Branch Sewer (D) Outfall Sewer
63. The presence of bacteria in water causes
- (A) Hardness (B) Alkalinity
 (C) Diseases (D) Bad taste
64. The pH value of water for public supplies is limited from
- (A) 6.5 to 8 (B) 2.5 to 6.5
(C) 8 to 10.5 (D) 10.5 to 15
65. The average domestic water consumption per capita per day for an Indian city may be taken as
- (A) 135 l/c/d (B) 210 l/c/d
(C) 240 l/c/d (D) 270 l/c/d

66. The method , which is most widely used for analysing and designing the pipes of all types of complex water distribution network is
- (A) Equivalent pipe method
 - (B) Hardy cross method
 - (C) Circle method
 - (D) Absolute method
67. The bacteria which require oxygen for their survival is known as
- (A) Anaerobic bacteria
 - (B) Pathogenic bacteria
 - (C) Aerobic bacteria
 - (D) Non-pathogenic bacteria
68. The most desirable temperature for public water supply is between
- (A) 0°C to 4°C
 - (B) 4.4°C to 10°C
 - (C) 11°C to 10.4°C
 - (D) 15°C to 20°C
69. The most commonly used disinfectant for drinking water throughout the world is
- (A) Alum
 - (B) Nitrogen
 - (C) Lime
 - (D) Chlorine
70. Temporary hardness of water is removed by
- (A) Adding lime to water
 - (B) Adding sulphate to water
 - (C) Adding pottasium to water
 - (D) Adding salt in excess

71. A estimate is a revised
- (A) rough estimate
 - (B) final estimate
 - (C) detailed estimate
 - (D) approximate estimate
72. The estimate which is prepared at the initial stage before execution of works is called
- (A) Major estimate
 - (B) Main estimate
 - (C) Detailed estimate
 - (D) Approximate estimate
73. In detailed estimate the volumes are worked out to the nearest
- (A) 0.001m^3
 - (B) 0.01m^3
 - (C) 0.005m^3
 - (D) 0.05m^3
74. The quantity of D.P.C is worked out in
- (A) m^3
 - (B) m^2
 - (C) m
 - (D) lump-sum
75. The gradual accumulation of amount by way of annual periodic deposits which is meant for the replacement of the structure at the end of its useful life period is known as
- (A) annuity
 - (B) sinking fund
 - (C) depreciation
 - (D) solatium

76. The quantity of cement required for $1 m^3$ of cement mortar 1:3 is
- (A) 360 Kg (D) 480 Kg
- (C) 720 Kg (D) 1440 Kg
77. Estimate is
- (A) the actual cost of construction of a structure
- (B) the probable cost arrived at before commencement of the structure
- (C) a random guess of the cost of construction
- (D) the absolute cost of construction
78. Block shear in a steel member occurs is
- (A) shear acts on one plane and tension act at perpendicular plane
- (B) shear acts on both planes
- (C) tension acts on both planes
- (D) compression in one plane and shear acts at perpendicular plane
79. The maximum value of effective slenderness ratio for a tension member in which reversal of direct stress occurs due to loads other than wind (or) seismic forces shall be
- (A) 120 (B) 400
- (C) 350 (D) 180
80. The effective width of flange of T beam is calculated by
- (A) $\frac{l_o}{3} + 3Df + 0.6bw$ (B) $\frac{l_o}{6} + Df + 6bw$
- (C) $\frac{l_o}{bw} + Df + 3bw$ (D) $\frac{l_o}{6} + 6Df + bw$

92. Negative slack indicates
- (A) On schedule condition
 - (B) Ahead of schedule condition
 - (C) Behind the schedule condition
 - (D) No such condition exists
93. If t_O , t_P and t_L represent the optimistic, pessimistic and most likely time estimates, the expected time of completion of the activity is given by
- (A) $t_E = \frac{t_O + t_L + t_P}{3}$
 - (B) $t_E = \frac{t_O + 2t_L + t_P}{4}$
 - (C) $t_E = \frac{t_O + 3t_L + t_P}{5}$
 - (D) $t_E = \frac{t_O + 4t_L + t_P}{6}$
94. An activity requires
- (A) resources
 - (B) time and resources
 - (C) time
 - (D) events
95. The entries in the measurement books (M-books) has to be entered by the
- (A) Technical Assistant
 - (B) Section Officer
 - (C) Sub-Divisional Engineer
 - (D) Divisional Engineer
96. The process of laying out the various activities of the project in a time sequence – logically, orderly and systematic manner
- (A) Project Surveying
 - (B) Project Sequencing
 - (C) Project Controlling
 - (D) Project Scheduling

97. A joint is taken for analysis only when there are not more than _____ unknown forces acting at the point.
- (A) 5 (B) 4
(C) 3 (D) 2
98. Neutral axis in a beam, passes through the
- (A) Major axis (B) Centre of area
(C) Minor axis (D) Principle axis
99. The section modulus of a circular section of diameter (d) is
- (A) $\frac{\pi}{32}d^2$ (B) $\frac{\pi}{32}d^3$
(C) $\frac{\pi}{64}d^3$ (D) $\frac{\pi}{64}d^4$
100. Moment of inertia of a rectangle about its XX-axis is given by
- (A) $\frac{bd^3}{12}$ (B) $\frac{db^3}{12}$
(C) $\frac{bd^2}{6}$ (D) $\frac{bd^3}{6}$
101. The limiting value of stress developed in a material such that the deformation caused by external load totally disappears on removal of that load is called
- (A) Modulus of elasticity (B) Ultimate stress
 (C) Elastic limit (D) Yield point stress
102. A steel rod 1 m long and 20 mm × 20 mm in cross section is subjected to a tensile force of 40 kN. Determine the elongation of the rod, if Modulus of elasticity for the rod material is 200 GPa
- (A) 0.5 mm (B) 1.0 mm
(C) 1.5 mm (D) 2.0 mm

103. A shaft revolving at r.p.m. transmits torque (T) in KN.m. The power developed is

(A) $2\pi NT kW$

(B) $\frac{2\pi NT}{30} kW$

(C) $\frac{2\pi NT}{60} kW$

(D) $\frac{2\pi NT}{120} kW$

104. A cantilever is a beam whose

(A) one end is fixed and other end free

(B) both ends are fixed

(C) both ends are simply supported

(D) one end is fixed and other end simply supported

105. The point through which the whole weight of the body may be assumed to act is defined as

(A) Centroid

(B) Centre of gravity

(C) Moment of inertia

(D) Point of area

106. The value of maximum bending moment for a simply supported beam of span ' l ' carry a concentrated load ' W ' at a distance ' a ' from A and a distance ' b ' from B is

(A) $\frac{Wab}{l}$

(B) $\frac{Wa^2b}{l}$

(C) $\frac{Wab^2}{l}$

(D) $\frac{Wab}{l^2}$

107. The relation between E (Modulus of elasticity), K (Bulk Modulus of elasticity) and C (Modulus of rigidity) is given by

(A) $E = \frac{9KC}{3K + C}$

(B) $E = \frac{6KC}{K + 3C}$

(C) $E = \frac{3K + C}{6KC}$

(D) $E = \frac{3KC}{3K + C}$

108. In a fixed beam, the point of contraflexure occurs in how many points?

(A) only one point

(B) two points

(C) not occurs

(D) three points

109. The value of Rankine's constant for Timber is

(A) $\frac{1}{9000}$

(B) $\frac{1}{7500}$

(C) $\frac{1}{1600}$

(D) $\frac{1}{750}$

110. What will be the slope at the fixed end of a fixed beam carrying uniformly distributed load (UDL) through out its span?

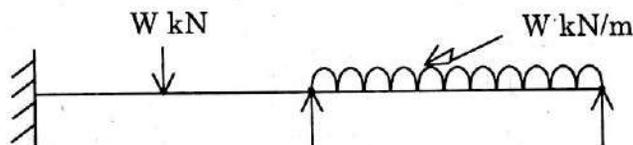
(A) $\theta_A = \theta_B = 0$

(B) $\theta_A \neq \theta_B$

(C) $\theta_A = \theta_B = 45^\circ$

(D) $\theta_A = \theta_B = 1$

111. What is the degree of indeterminacy of the following continuous beam with partially fixed support?



(A) 0

(B) 1

(C) 2

(D) 3

112. The ratio of the stiffness of the member to the total stiffness of all the members meeting at the joint is

(A) Carry over factor

(B) Stiffness factor

(C) Distribution factor

(D) Relative factor

113. The survey used for determining points of strategic importance is
- (A) Archaeological survey (B) Topographical survey
 (C) Engineering survey (D) Military survey
114. A simply supported beam of span ' l ' is carrying a UDL of w per unit length. If the beam is propped at its centre then in Bending moment diagram, the Bending moment is zero at a distance of
- (A) $\frac{2l}{8}$ from both ends (B) $\frac{3l}{8}$ from both ends
 (C) $\frac{3l}{4}$ from both ends (D) $\frac{3l}{2}$ from both ends
115. A cantilever of span l is fixed at A and propped at the other end B . if it is carrying a uniformly distributed load of w per unit length, then the prop reaction will be
- (A) $\frac{3wl}{8}$ (B) $\frac{5wl}{8}$
 (C) $\frac{3wl}{16}$ (D) $\frac{5wl}{16}$
116. A fixed beam AB of span 6 m is subjected to two point load of 20 KN each at distance of 2 m from both ends then the fixing moments are
- (A) 16.67 KNm (B) 26.67 KNm
 (C) 36.67 KNm (D) 26.07 KNm
117. A simply supported beam of span (l) is subjected to a UDL of (w) per unit length over the whole span. The maximum deflection at the centre of the beam is
- (A) $\frac{5wl^3}{48EI}$ (B) $\frac{5wl^4}{96EI}$
 (C) $\frac{5wl^4}{192EI}$ (D) $\frac{5wl^4}{384EI}$

118. The angular aggregates obtained from laminated rocks having thickness smaller than the width and /or length are termed as
- (A) rounded (B) irregular
 (C) flaky (D) thawing
119. A small portion of the painted surface is sometime seen loose. It is known as
- (A) Flaking (B) Flashing
(C) Blistening (D) Fading
120. A couple – close roof is used for span upto
- (A) 3.5 m (B) 4.2 m
(C) 9 m (D) 14 m
121. The elongation index is not applicable to size smaller than
- (A) 10 mm (B) 8.2 mm
(C) 13 mm (D) 6.3 mm
122. A pitched roof in which rafters slope to one side only is called
- (A) Lean-to-roof (B) Couple roof
(C) Collar beam roof (D) Couple-close roof
123. Dormer window
- (A) A small window at a greater height than regular window
 (B) A vertical window provided on the sloping roof
(C) A window provided in a door
(D) A window in which shutter can rotate vertical only

124. According to IS 383 – 1970, the average loss of weight after ten cycles should not exceed _____ percent when aggregate tested with sodium sulphate.
- (A) 12 (B) 16
(C) 18 (D) 20
125. Potash- lime glass also known as
- (A) Bohemian glass (B) Pyrex glass
(C) Bottle glass (D) Common glass
126. The brick laid with its length parallel to the face of the wall is called a
- (A) course (B) stretcher
(C) header (D) closer
127. In road arboriculture for clayey soil
- (A) Mango tree recommended (B) Kanju tree recommended
(C) Skisham kanji tree recommended (D) Arroo tree recommended
128. The clear distance between any two adjacent support is called the
- (A) total span (B) span
 (C) clear span (D) clear total span
129. In traffic sign, sign in circular shape, blue background, a red border, and an oblique red bar at an angle of 45° is used as,
- (A) Stop sign (B) No-parking sign
(C) Prohibitory sign (D) Speed limit sign
130. When the load on a foundation is excessive and heavy and other types of foundations are uneconomical, then _____ is the only alternative.
- (A) spread foundation (B) raft foundation
(C) grillage foundation (D) pile foundation

131. Inorganic silt with low plasticity is denoted as
- (A) MH (B) LC
 (C) ML (D) LS
132. Based on structural behaviour, pavements are generally classified into _____ categories.
- (A) five (B) four
(C) three (D) two
133. The maximum content @ which further reduction in water does not reduction in volume is known as
- (A) Liquid Limit (B) Plasticity Index
 (C) Shrinkage Limit (D) Liquidity Index
134. Poorly graded gravel is generally denoted by a symbol as
- (A) SP (B) GP
(C) GM (D) GW
135. The minimum water content at which the soil will flow under the application of very small shearing force is known as
- (A) Plastic limit (B) Shrinkage limit
 (C) Liquid limit (D) Plasticity index
136. The integral part of the road pavement structure to support the pavement from beneath
- (A) Base course (B) Binder
(C) Aggregate (D) Sub grade soil
137. Limiting gradient value on plain terrain is
- (A) 3.3% (B) 5%
(C) 7% (D) 9%

138. A channel without any cover at the top is known as
- (A) Natural channel (B) Artificial channel
 (C) Open channel (D) Prismatic channel
139. Chezy's formula to calculate the velocity of flow
- (A) $V = C\sqrt{mi}$ (B) $V = C\sqrt{mi}^{3/2}$
 (C) $V = Cm^{2/3}i^{1/2}$ (D) $V = AC\sqrt{mi}$
140. The total energy line lies over the hydraulic gradient line by an amount equal to the
- (A) Velocity head (B) Pressure head
 (C) Pressure head + Velocity head (D) Pressure head – Velocity head
141. The value of standard Atmospheric pressure is
- (A) 101.3 KPa (B) 10.13 KPa
 (C) 1.013 KPa (D) 1013 KPa
142. The coefficient of discharge of internal mouthpiece running full is given by
- (A) 0.707 (B) 0.85
 (C) 0.50 (D) 0.60
143. The discharge through an external mouthpiece is given by
- (A) $0.855 a\sqrt{2gH}$ (B) $1.85 a\sqrt{2gH}$
 (C) $5.85 aH\sqrt{g}$ (D) $85 a\sqrt{gH}$
144. Centrifugal pump is suitable for
- (A) Higher heads
 (B) Less discharge
 (C) Less discharge and higher heads
 (D) Large discharge and smaller heads

145. The theoretical velocity of jet at vena contracta is given by the relation, where h = Head of water at vena contracta,

- (A) $\sqrt{2gh}$ (B) $2\sqrt{g}h$
(C) $2g\sqrt{h}$ (D) $2gh$

146. The dimension of Chezy's constant 'C' is

- (A) LT^{-1} (B) $L^{-1}T^{\frac{1}{2}}$
 (C) $L^{\frac{1}{2}}T^{-1}$ (D) $L^{-1}T$

147. Centrifugal pump works on the principle of

- (A) Forced vortex flow (B) Forced laminar flow
(C) Forced uniform flow (D) Forced steady flow

148. Orifice and Mouthpieces are used to measure

- (A) the velocity of liquid (B) the rate of flow of liquid
(C) the pressure of the liquid (D) the density of the liquid

149. The numerical value of 1 Pa of pressure is equal to

- (A) $1N/m^2$ (B) $1kN/m^2$
(C) $1MN/m^2$ (D) $10N/m^2$

150. A flow, in which each liquid particle does not have a definite path, and the paths of individual particles also cross each other, is called a

- (A) Rotational flow (B) Non-uniform flow
 (C) Turbulent flow (D) Unsteady flow

151. In chain, Handles are connected to the link by
- (A) Flexible joint (B) Rigid joint
 (C) Swivel joint (D) Ball and socket joint
152. In Single plane method, the chosen Instrument stations at A is higher than 'B', then the horizontal distance between Instrument station 'A' to Staff station is calculated by
- (A) $D = \frac{d \tan \alpha_2}{\tan \alpha_1 - \tan \alpha_2}$ (B) $D = \frac{d \tan \alpha_2 - S}{\tan \alpha_1 - \tan \alpha_2}$
 (C) $D = \frac{d \tan \alpha_2 + S}{\tan \alpha_1 - \tan \alpha_2}$ (D) $D = \frac{d \tan \alpha_2 - S}{\tan \alpha_2 + \tan \alpha_2}$
153. An Invar tape is made of an alloy of
- (A) Brass and nickel (B) Brass and steel
 (C) Copper and steel (D) Nickel and steel
154. The bearing of line measured eastward or westward from north or south, which ever is nearer is called
- (A) Whole circle bearing (B) Reduced bearing
 (C) Fore bearing (D) Back bearing
155. The distance between two station P and Q is 200 m, whereas their difference in elevation is 2 m, Hence the horizontal distance between P and Q is
- (A) 199 m (B) 199.9 m
 (C) 199.99 m (D) 199.995 m
156. Isogonic line is the line drawn through the points of same
- (A) elevation (B) bearing
 (C) declination (D) dip

162. The simplest particulate control device is a
- (A) Dust hoppers
 - (B) Settling Chamber
 - (C) Electrostatic precipitation
 - (D) Cyclone
163. Effect of Air pollution on metals results in
- (A) Reduction in tensile strength
 - (B) Cracking
 - (C) Loss of metal
 - (D) Temperature increase
164. The effect of Iron oxide in water will cause
- (A) Hardness
 - (B) Corrossion of metal
 - (C) Alkalinity
 - (D) Taste
165. Floating matter, oil, fat, grease are removed in _____ tank.
- (A) Sedimentation tank
 - (B) Septic tank
 - (C) Skimming tank
 - (D) Sewage tank
166. A structure constructed to provide access to the sewer for facilitating inspection, cleaning or usual maintenance operations is termed as
- (A) Man hole
 - (B) Light hole
 - (C) Soil pipe
 - (D) Vent pipe

167. Water free from salt is called as
- (A) Salty water (B) Brackish water
 (C) fresh water (D) Dissolved water
168. The intake well located near the bank of canal is called
- (A) River Intake (B) Canal Intake
(C) Submerged Intake (D) Jack Well
169. Waters are considered "hard", if the hardness is of the order of
- (A) 50 ppm (B) 100 ppm
(C) 150 ppm (D) 300 ppm
170. In levelling work with dumpy level and wooden staff readings are taken with a least count of
- (A) 0.001 m (B) 0.01 m
 (C) 0.005 m (D) 0.10 m
171. The net area of the living rooms excluding kitchen, pantry etc.
- (A) non-liveable area (B) carpet area
(C) plinth area (D) total area
172. The unit of measurement for electrical fittings is
- (A) m (B) Nos
 (C) Points (D) m²

173. What is the unit of measurement used for reinforced brick work?
- (A) sq.m (B) cu.m
(C) metre (D) tonne
174. One Hectare is equal to
- (A) 10,000 m² (B) 1000 m²
(C) 100 m² (D) 10 m²
175. The value of dismantled materials is
- (A) Salvage value (B) Scrap value
(C) Market value (D) Book value
176. The volume of cement in one bag is
- (A) 0.067 m³ (B) 0.050 m³
 (C) 0.034 m³ (D) 0.025m³
177. Amount of cement required for 1m³ of cement concrete with 1:1.5:3 ratio using 20 mm aggregate
- (A) 0.285 m³ (B) 0.385 m³
(C) 0.185 m³ (D) 0.485 m³
178. According to Indian standards Institute, the actual size of modular bricks is
- (A) 22 cm × 11.5 cm × 11.5 cm
(B) 21 cm × 13 cm × 13 cm
 (C) 19 cm × 9 cm × 9 cm
(D) 20 cm × 10 cm × 10 cm

179. To control the deflection of cantilever beam, the basic values of span to effective depth for span up to 10 m is
- (A) 22 (B) 20
 (C) 7 (D) 26
180. When dowel bars are used in footings, the diameter of the dowel bars shall not exceed the diameter of the column bar by
- (A) 5 mm (B) 2 mm
 (C) 3 mm (D) 4 mm
181. In the design of beams, if the section is designed as under reinforced,
- (A) Concrete reaches its ultimate capacity first
 (B) Both concrete and steel reaches its ultimate capacity simultaneously
 (C) Steel reaches its ultimate capacity first
 (D) None of the above
182. In the design of beam with monolithic construction, the critical section for shear is calculated
- (A) At a section $d/3$ from the face of the support
 (B) At the middle
 (C) At the face of the support
 (D) At a section ' d ' from face of the support
183. The development length of bar in a isolated square footing shall be
- (A) 32ϕ (B) 24ϕ
 (C) 28ϕ (D) 47ϕ
184. In the design of two way slab, the values of short span negative BM coefficient (α_x) for all values of $\frac{l_x}{l_y}$ at continuous edge for the case of two long edge continuous is
- (A) 0.045 (B) Zero
 (C) 0.035 (D) 1.0

185. In the continuous slab, the curtailment length at the top of the slab near the end support from the face of wall shall be
- (A) $l/10$ (B) $l/5$
 (C) $l/8$ (D) $l/20$
186. When the column is subjected to axial load with biaxial bending, the column shall be designed for
- (A) p_u (B) p_u, l_x
 (C) p_u, l_x, l_y (D) p_u, l_y
187. In the design of T-beam, the recommended value of $\frac{Df}{d}$ for all the grades of steel by the IS code 456-2000 shall be
- (A) 0.12 (B) 0.36
 (C) 0.446 (D) 0.2
188. The average strength of 150 mm size concrete cube with a characteristic strength of 20 N/mm² and a standard deviation of 4 N/mm² is
- (A) 26.58 N/mm² (B) 31.24 N/mm²
 (C) 18.67 N/mm² (D) 21.76 N/mm²
189. In the two-way simply supported slab, the bending moment along y-direction is
- (A) $\alpha_x w l_x^2$ (B) $\alpha_y w l_x^2$
 (C) $\alpha_y w l_y^2$ (D) $\alpha_x w l_y^2$
190. The diameter of the lateral ties in a column should be greater than 5 mm as well as
- (A) $\frac{1}{4}$ of dia. of longitudinal bar (B) $\frac{1}{6}$ th of dia. of longitudinal bar
 (C) $\frac{1}{8}$ of dia. of longitudinal bar (D) $\frac{1}{10}$ of dia. of longitudinal bar

191. The amount of S.D. to be deposited by the tenderer is
- (A) 1% of the tender amount
 - (B) 10% of the tender amount
 - (C) 15% of the tender amount
 - (D) 20% of the tender amount
192. The business organisation run by an individual is called
- (A) One man organisation
 - (B) Individual organisation
 - (C) Single man proprietorship
 - (D) Sole proprietorship
193. The occurrence of the completion of an activity is called its
- (A) head event
 - (B) tail event
 - (C) dual event
 - (D) on-going activity
194. The contractor undertakes to complete the construction work in full, for a total sum fixed by the owner is called
- (A) Lump sum and schedule contract
 - (B) Lump sum contract
 - (C) Unit rate contract
 - (D) Cost plus percentage contract
195. CPM adopts
- (A) Probabilistic approach
 - (B) Deterministic approach
 - (C) Stochastic approach
 - (D) Periodic approach

196. A computer model than mimics the operation of a real (or) proposed system is called
- (A) Robot Technology
 (B) Simulation
 (C) Database approach
 (D) Integrated Accounting System
197. D.L.R. stands for
- (A) Daily Labour Register (B) Daily Labour Roll
 (C) Daily Labour Report (D) Daily Labour Record
198. SISI stands for
- (A) Small Scale Industries Services Institute
 (B) Small Institution Services Industries
 (C) Small Industries Services Institute
 (D) Service Industries Services Institute
199. The reliability of the test results of the sample can be assessed based on
- (A) Reliability number (B) Probability number
 (C) Stock number (D) Liability number
200. Cost Slope is given by
- (A) $\frac{\text{crash cost} - \text{normal cost}}{\text{normal time} - \text{crash time}}$ (B) $\frac{\text{crash cost} - \text{normal cost}}{\text{crash time} - \text{normal time}}$
 (C) $\frac{\text{normal time} - \text{crash time}}{\text{crash cost} - \text{normal cost}}$ (D) $\frac{\text{crash time} - \text{normal time}}{\text{crash cost} - \text{normal cost}}$

SPACE FOR ROUGH WORK

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